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ABSTRACT

This report describes the first year of an ongoing intervention study and the learning of a group of practicing teachers working together with researchers to make changes in the ways they teach mathematics. When reflecting on their beginning efforts, the researchers found that several assumptions in their planned interventions were not borne out by the group's experience. The subject matter content (integers) they selected as an initial focus of study posed major difficulties for several of the teachers. The teachers' interest in talking about their own practices strongly influenced the group's interactions. Collectively, the teachers and researchers created a learning community that was grounded in watching videotapes of mathematics teaching in a third grade classroom and discussing ideas about teaching and learning in ways that were different from their own experiences as teachers and students. Here the researchers pose a set of conjectures that serve as a framework for the continuing collaboration of this group of educators' inquiry into nontraditional approaches in the teaching and learning of mathematics. (Author)

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National Center for Research on Teacher Learning

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Abstract

In this report, the authors describe the first year of an ongoing intervention study and the learning of a group of teachers and researchers who are working together to make changes in the ways they teach mathematics. When reflecting on their beginning efforts, the researchers found that several assumptions in their planned interventions were not born out by the group's experience. The subject matter content (integers) they selected as an initial focus of study posed major difficulties for several of the teachers. The teachers' interest in talking about their own practices strongly influenced the group's interactions. Collectively, the teachers and researchers created a learning community that was grounded in watching videotapes of mathematics teaching in a third grade classroom and discussing ideas about teaching and learning in ways that were different from their own experiences as teachers and students. Here, the researchers pose a set of conjectures that serve as a framework for the continuing collaboration of this group of educators' inquiry into non-traditional approaches in the teaching and learning of mathematics.

"Could You Say More About That?"

A Conversation about the Development of a Group's Investigation of Mathematics Teaching

Helen Featherstone, Lauren Pfeiffer, Stephen P. Smith, Kathy Beasley, Debi Corbin, Jan Derksen, Lisa Pasek, Carole Shank, and Marian Shears

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I remember walking timidly into the first session of the Investigating Mathematics Teaching class. I had been intrigued by the description of the class which would be looking at teaching math in a third grade classroom. I had just started my first teaching job, a part time, temporary position in a Professional Development School. I would be teaching math and since I had graduated more than 10 years ago and had only a bad experience in a masters level math course, I decided I better find out "how to teach" math. I knew I wouldn't be satisfied to only use the teacher's guide. Little did I know that a year and a half later I would still be meeting with this group of educators.

—Jan

During my undergraduate work at MSU, I had profound "rebirth" in the area of mathematics teaching. After two years of teaching, I returned to MSU to begin graduate studies and underwent another refocusing—a kind of "a-ha" experience. I realized that I was missing something: the element of genuine discourse and deliberation about mathematics among students. In spite of this experience which was, at the time, quite shaking, I came to the IMT group the following fall feeling refocused and confident that I now had a handle on what I wanted for my mathematics students and for myself.

I was intrigued with the idea of utilizing multimedia capabilities organized around a mathematics classroom. I envisioned independently manipulating the HyperCard facilities to find out "what a teacher could learn" from using such technology.

I had no idea that the technology would serve first as a springboard and later only as a backdrop to the very personal and collective professional investigation of mathematics teaching and learning.

—Lisa

Jan and Lisa are remembering the feelings they had the first time they came to Investigating Mathematics Teaching (IMT), which had been described to them as an experimental course for practicing teachers. Helen, Steve, and Lauren, researchers with the National Center for Research on Teacher Learning, had organized this course in order to learn about the ways in which a multimedia collection of materials documenting teaching and learning in Deborah Ball's third grade mathematics class might be useful to teachers who were interested in thinking about new ways to teach math.[1] They advertised a "group independent study" for elementary and middle school teachers in the masters program in Michigan State University's College of Education, but also welcomed teachers who wanted to participate without enrolling for course credit.

As the recollections of Jan and Lisa suggest, the seven teachers who became the IMT group assembled with different agendas, hopes and fears. They were all, however, committed to thinking hard about the teaching and learning of mathematics. And like Steve, Helen, and Lauren, the three university people, they felt sure that they wanted to teach math in ways that were different from those they had experienced as students in elementary and secondary school. They were, however, in different places on the journey away from traditional mathematics teaching and toward something else. And they were in quite different places then, on that afternoon in early October 1991 than they are today.

Much of the history of the group is the history of individuals rethinking their own practice and their relationship to and attitudes toward mathematics. Some parts of that story we have told elsewhere (see, for example, Featherstone, Beasley, Corbin, Shank, and Smith, 1993; Featherstone, Pfeiffer, and Smith, in press; and Pfeiffer, Featherstone, and Smith, 1993). Some of it, however, is the story of an ongoing and evolving conversation about the teaching of mathematics that has lasted through most of two academic years. In December of 1991, at the last meeting of the "group independent study," several of the teachers expressed an interest in continuing to meet. Steve, Lauren, and Helen were also eager to continue the work that we all seemed to have begun and so we set a schedule of biweekly meetings for the following quarter. Over winter break all the other teachers decided that they too would like to continue the connection. At the end of winter quarter, we decided to continue through spring quarter, and at our last meeting, in June 1992, we agreed to reassemble in late August to discuss plans for launching the 1992-93 school year. We have been meeting at least every other week this year.

By the end of the 1991-92 school year, several of us had begun to comment on changes in the nature of the conversation that occurred at our Thursday night meetings. Over the summer Lauren, Steve, and Helen decided to examine these changes empirically and to try to understand them better. In January 1993, they asked the teachers to help them to think about the changes that had occurred over time; several intriguing conversations followed. The conjectures that we[2] generated in these conversations included the idea that, over time, the teachers had begun to "push each other more." In an effort to develop a clearer understanding of what this meant and how the ecology of group meetings might support or discourage this "pushing," we began to look at one meeting through the lens of "discourse analysis" (Tannen, 1989; Coultard, 1992; Shultz, Florio, and Erickson, 1982; Cazden, 1989) and to plan further study of the evolution of this phenomenon over time (Pfeiffer, Featherstone, and Smith, 1993).

Discourse analysis provides one tool for looking carefully at aspects of the group's conversation. It helps us to see, in the actual talk, the ways in which the group members participate in a collective study of the teaching and learning of mathematics and, in turn, support one another's social, emotional, and intellectual efforts to make changes. We learned what some aspects of the discourse looked and sounded like, and how the group worked together to understand, for example, the mathematical and pedagogical questions surrounding the efforts of third graders to grapple with the relative size of one-half and one-fifth. We did not explore, however, the way individuals experienced our meetings, or the way they thought about the relationship between what we did on Thursday evenings and what they did in their classrooms. Hoping to capture and

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communicate some of this, we returned to our usual tools: writing and conversation. Jan, Lisa, and Marian volunteered to write about some of their thoughts—about their own participation in the group, about the relationship between our joint conversations and their teaching, about the evolution of the conversation. The nine of us then came together on a Sunday afternoon to read and to talk about their texts. Helen then edited the texts and the transcribed conversation into this paper.

Lisa's and Jan's writing (p. 1) took the group back to the moment when teachers and researchers came together for the first time. During our first meeting we watched a videotape of a third grade mathematics class discussing a few of the number sentences that the students had generated in response to Ball's request that they "write number sentences equal to 10." One student's suggestion that "200 take away 190 equals ten" launches a debate which remains unresolved by the end of the period. When a second student comes to the board and shows why she thinks that 200-190=190, many of her classmates agree, although some do not. For the next three math periods the students work on and discuss problems that their teacher creates and poses in order to explore and challenge the conceptions that underlie the approach which leads the third graders to assert that "you can't take nine from zero so you write down the nine." Our conversation begins with Jan's and Lisa's written recollections of what they said and felt during these early meetings.

Our conversation did not, however, move from these early memories into a linear history of the group or of our memories of it. Rather, these texts—some of which are reproduced here in italics—launched us into some reflections on schools, teachers, and administrators, and on the reasons that the teachers have found the group useful and even necessary.

The development of this Sunday afternoon conversation mirrors that of the IMT group. Like the group, it starts with some texts: The texts here are the writings of Lisa, Jan, and Marian. The texts for the IMT group were, to begin with, videotapes and other materials documenting teaching and learning in Deborah Ball's third grade mathematics class. In recent months we have sometimes started watching videotapes of our own math classes. Like the conversation in the group's regular Thursday night meetings, this conversation moves back and between these texts and other matters. And like the conversation in the regular IMT meetings, this conversation ends up digging deeply into questions that come up because of the texts but are not always directly related to them.

Getting Together

Kathy: When I read what Jan wrote, I just started thinking about the first time I walked in. And "timid" is a good word. I had this great fear that everyone here was going to be really good at math. I knew I wasn't, and I kept thinking, "What are they going to think when they find out that this person is in this math group that doesn't know anything about math?"

Carole: I was really confused about why I was there. I knew I wanted to do something about math, and Kathy and other people talked about the NCTM *Standards*. I didn't know a thing about the *Standards*, plus I didn't know much about math.

First Impressions: Watching Tape

When I first watched Deborah Ball end her math class "in the middle of a problem" I panicked. How could she do this to these children? Would they be able to sleep at night not having heard the answer? Is one problem a day enough? How would I ever get through all my "material" if I taught like that? Where are the manipulatives? How can you teach negative numbers to third graders? Why would you?

In some of our early sessions as I recall the others talking about "teaching this way," the "Standards," and "discourse in the classroom." "This way of teaching" was even compared to the "Whole Language" method. This was all new to me and I was afraid to speak up in the beginning. I spent a lot of time listening and thinking. I often heard doubt in some of the other voices. Some of this had to do with a

lack of support in their district, but I also sensed that it had to do with the fact that this was a new way of looking at teaching math,. Maybe we were all "walking on thin ice."

—Jan

My first response to Deborah spending 3 days on 200-190=? was to turn to one trusted friend in the group and say, "I can't believe she spent 3 days on those problems!" As the group discussed the lesson I commented that administrators in my district would have a very hard time with this idea.

Late in the school year, I talked of my own perspective on the 200-190 problem as being an important reference point in the changes in my own thinking. Seven months after that restless, urgent interjection (that my administrators wouldn't understand spending 3 days on one problem), I found myself acknowledging that regardless of opposition or resistance, real or perceived, that I had been experiencing in my teaching, it was ME who had had so much apprehension and conflict with this kind of genuine discourse as a primary pedagogical tool.

Now, I can't believe how much I've changed. I've come to see what really happens in a classroom where students use discourse to construct their own understanding. To a large extent, I had used my district administration as a scapegoat for why I couldn't "do" that kind of discussion in my mathematics classroom. By this later point, a trust has developed in the group that has enabled me to put out on the table that I had been unwilling to say "I have a problem with this. . . ."

But it wasn't just a matter of emotional support, but also of providing an environment for intellectual exploration.

—Lisa

As a beginning teacher I was in essence starting with a clean slate. I was able to make my own curriculum decisions and I had no one watching over me. This was actually a frightening experience. It seemed that the other members in the group had either been teaching for several years and "needed" to make changes in their teaching for survival or they had "grown up" with this way of looking at teaching. I wasn't sure what I thought or believed. I had no foundational experiences to compare this to. I didn't have a store of negative experiences nor of positive teaching experiences. A lot of teachers at my school were looking at math in different ways but I can still remember being advised to "just use the teachers guide your first year."

I remember those early experiments with "testing the ice." I bought math journals and, borrowing from Deborah Ball, I asked my third graders to "write number sentences equal to 10." I was amazed by their responses and by what I learned about their understandings. I looked forward to sharing this with the rest of the group.

—Jan

Jan: I agree so much with what Lisa wrote. Because I think she is saying that so much is self-imposed, and I feel that way, too. I actually get support from my principal,but not from my colleagues. When I say, "Have you tried this or that?" it's as if I don't exist because I don't have credibility. I think I had some feelings reaffirmed here. And so I began thinking that maybe I *am* making some right decisions, decisions that are best for kids, regardless of the "What chapter are you on?" questions. And I've decided, even though it's frustrating and I hope that maybe someday we'll be able to engage, that right now I have to sort of do my thing and talk to the one or two people who want to talk.

Kathy: Do you think it's partly because you are a first year teacher?

Jan: Probably. They've been around. . . .

Marian: Lisa used to talk a lot about the feeling that no one would listen. No one.

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Lisa: I think that they listen, but. . . . A teacher in my district is really struggling to make changes and she made the comment, "For twenty-five years I've tried to do everything that they've asked me to do and it's never been what they've wanted." It was terrible hearing the pain in that statement.

So often teachers will look and they'll say, "Here's a teacher who's enthusiastic, they're dedicated to their own professional development; they're inexperienced, obviously. They don't know what teaching is all about yet." That's why it is so revitalizing to come here and see that there are teachers here who have been in the classroom for twenty-five years, they know the ropes and they're still fighting.

Kathy: It's true. I remember when I first started out, if I'd make a comment that was discouraging or not optimistic, people would say, "Now you sound like a real teacher!" It was like they were saying, "Now people will listen to you."

Jan: That's what makes this group unique. Teachers, we beat each other up. We aren't supportive of one another, that's my experience. It's as though there's a competition: Who's going to have the cutest bulletin board display in the hall? or whatever.

The IMT group is a place in which we began to share our frustrations and insecurities. We came to accept that teaching is struggling—of an honorable, honest sort. We also continued to examine interactions and issues in the videotapes and connect them to our own teaching, our own experience and ideas. We began to question episodes of mathematics teaching in the videotapes and echoes of those questions reverberated in our own heads, pushing us to ask such questions of ourselves and of each other.

The group has provided me with a safe environment in which I can discuss my own teaching, listen to others, and force myself to think about and question what I am doing. But most important, this nurturing and challenging atmosphere has encouraged me to take risks.

—Lisa

Lisa: I have a time every week where about half of the kids go out of the room to band. The ones who are left seem to be the ones who have more trouble with math, so I talked to them last week about having a math support time. I had them break into groups in which some people would be giving support and others would be receiving support.

I was watching two students who were working together and one was *pushing* the person who was having trouble, actually pushing on them. It was very vivid. And I said, "Stop!" I held up my pen and I told them that there's a difference between pushing a pen and sending it flying, and just supporting it. I asked them to think about the difference. And that developed into thinking with the kids about what you do when you help someone ride a bicycle: You hold that back bar and you run with them, and you don't know what to say that's going to help, you just encourage them, saying, "You can do this." You're giving the support you can, but you can't "teach" them: The other person really has to get it for themselves.

Anyway, at the end of the period I had them spend the last five minutes writing about what they learned or what they were thinking. And this one boy wrote, "I learned that *getting* support is much harder than *giving* support." And I thought he had unlocked the mystery of the universe.

And I sort of thought that the bike analogy kind of connects to what we do here. Even though we are not world class cyclers, we can still help each other, balance each other out. Even though we are not experts.

Kathy: It's harder to be on the bike, trying to learn, than to be running alongside.

Helen: And it makes you think about yourself and what's involved in accepting support.

The Development of Discourse

Our group began as a collection of individuals who were all interested in examining the teaching of mathematics. Some of us knew each other (three even taught at the same school), and some of us met for the first time at our first session. We all thought that we were simply participating in a ten-week university class. But what happened in that class over time changed our perceptions and our goals.

At first our meetings centered around watching and discussing videotapes of Deborah Ball's third grade mathematics class. The instructors selected the tape each week and we discussed what was happening in that class and how it pertained to our own classrooms. Through these weekly discussions a pattern began to emerge. At first we focussed on what was happening in Ball's classroom: what representations the teacher used, how specific children made sense of problems, et cetera. Over time, however, our focus began to shift. Instead of looking just at what was happening, we also began to look at why that might be happening. We, collectively, took a step back to look at the bigger classroom picture.

As a part of this new way of looking at the tapes, we began to examine the patterns of classroom talk: the kinds of questions the teacher asked and the kinds of responses kids gave to her and to each other. Specifically, our group started to focus on the classroom culture and the part that discourse played in it.

By discourse we meant more than just classroom talk. We meant that students were involved in explaining their ideas to each other, that they had, and shared, reasons for their ideas, and they listened to each other. Good discourse requires an environment where students don't look to the teacher for "answers," but look to each other (and within themselves). They don't just accept answers blindly either; they ask for (and offer) logical reasons.

As our group examined discourse in Deborah Ball's classroom, we began to change in subtle ways. We found ourselves asking each other the same questions that Ball asked her students—questions like "Why do you think that?" What do others think?" or "Could you say more about that?" We began to push each other's thinking in ways that Deborah pushed her students' thinking. In other words, while studying the discourse on the tapes, we created a classroom culture of discourse within our group.

This development of discourse seemed to have a dual relationship with trust within our group. First, we were able to develop it because we were beginning to trust each other. But our trust also grew as a result of participating in discourse, perhaps because respect for another's ideas is inherent in good classroom discourse. Interestingly, no one in our group ever talked about the parallels that were developing between our group's talk and the talk in Deborah Ball's third grade classroom. We weren't consciously aware of what was happening, but we were modeling something that grew out of our shared experience.

We did, however, openly discuss how we could cultivate discourse in our own classrooms. We wanted our students to question each other, and to give and expect reasons for their thoughts. As teachers, we tried to model discourse for our students. We also taught it directly, saying things like, "It's important that we listen to each other."

Perhaps we were better able to teach and model good discourse only after we had experienced it ourselves.

It is difficult to trace this experience and it varies for different members of the group. But, there is a shared sense that we moved from a set of concerned individual teachers to a collective that seeks and supports a critical but trusting atmosphere in which we purse an

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Kathy: I think that's an example of trust. Lisa was telling a story, almost in a way like she's kind of telling us how to do discourse or get ready for discourse. And it just made us all think about it. I don't know. I don't think you ask questions like that to people if you don't think that it's going to be okay with them.

Like, if I ask a question in my staff meeting, people generally assume that I'm asking it not because I'm seeking information, but I'm sort of maybe trying to put their idea down or play out a problem with it. And I think here, when we ask questions people understand that what we want is information.

Marian: You just said it: "Assume." We don't assume the motive. If something doesn't strike us right, we say, "What do you mean by that?" or "Are you saying that . . . ?" So instead of assuming negative motives, we try to clarify.

Jan: Do any of the rest of you find yourselves, when you're talking with people, saying, "I'm not trying to be argumentative?" I find myself saying that a lot, because I do ask questions. I want to understand people's reasons.

Getting to Trust

Debi: I want to know how we got to this trust. Because it's really hard for me to get to a point where I feel free to talk. I was talking to another instructor about why I don't talk in that class, versus why I do talk in here. She was wondering why, and I'm not sure why except that we've been together longer and I was allowed to be quiet for as long as I needed to be, until I felt safe enough to start sharing things.

Marian: I think, too, that the shared experience of watching and discussing the tapes of Deborah Ball's class was a big part of it. We were building a common frame of reference: We could always say, "Like in Deborah's class. . . ."

Lisa: And maybe that common frame of reference was a safely net: We were talking about things that we were really thinking through in our own classrooms when we were talking about what we saw in the other class. We could say, "Look at how directive she was," without saying, "You're being directive," "I'm being directive." We could say, "This person on this tape that isn't here is being directive," and we could discuss whether or not that's okay without turning it into something personal.

Marian: So part of that trust is because we could take those risks with someone else first. Deborah took those risks for us.

What are Questions For?

Lauren: I wanted to pick up on Kathy's comment that when questions were asked in the group it was to find out more information. I wanted everybody to talk more about that, because that surprised me: I would have thought questions also served other functions besides getting information.

Helen: I think what she was saying is that they're not a backhanded way of criticizing. That we assume a wholesome motive, if you will.

Debi: And that if you want to know something, it's safe to ask.

Marian: What I think you're saying is that we also use questions in another way: Maybe we ask questions to get each other to think about things from a different perspective.

Lauren: I guess that's what I'm curious about. Is that true? And how do you think about that?

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emerging shared vision of mathematics teaching. This vision includes fostering a classroom culture of discourse much like the one we have experienced.

—Marian

Lisa: When I looked at this description of the way we developed discourse in here, a couple of things struck me. One was where she says "Good discourse requires an environment where students don't look to the teacher for 'answers' but look to each other (and within themselves). They don't just accept answers blindly either; they ask for (and offer) logical reasons." I crossed out "students" there and put "teachers," because that begins to describe the discourse within our group.

Then, further down here, it says, "Perhaps we were better able to teach and model good discourse only after we had experienced it ourselves." I felt very strongly about that and thought a lot about comments that we've made about how the support that we've felt, the support we continue to feel, supports the development of what we do in our classrooms.

Debi: I was struck by that same thing, because the thing that I realized was that I really didn't know what discourse *was* and I was trying to create it in my classroom. And here we have done it ourselves, slowly. It hadn't really occurred to me that that was what we were doing in here, but we have kind of taught ourselves, or at least I have been taught on my own level, so maybe I can take that and transfer it more easily to what I do with my students.

Pushing Each Other and Developing Trust

At our first meeting of our second year, I was sharing my own ideas about whether to start the year with a set of lessons which would engage students in a very "safe" introduction to discourse—focusing on setting classroom norms. The students would be encouraged to agree or disagree with each other's puzzle models given very cut and dry criteria. Totally unexpectedly, Kathy asked a question that came at me from across the table like a bullet: "But, isn't the discourse in the task?" THUMP. And I think to myself. . . she's right. If my task is well constructed, won't students engage in a more genuine discourse? But it is the beginning of the year, so maybe we can start off in a safer way, introduce norms and vocabulary in a set of lessons which would require less intellectual risk-taking for these new sixth graders who have never been asked to think about whether they agree or disagree with a mathematical idea.

Already we were challenging each other and ourselves to not take anything for granted, but to really dig into what decisions we were making and why we were making them. This intellectual pursuit of teaching could only take place in a setting of trust. In this context, a hard hitting question is not meant to embarrass or demean—It is a supportive push—Often these questions are ones that are hard to push ourselves on because we may too quickly settle for our own perspective.

—Lisa

Kathy: I don't remember even asking that question.

Lisa: You *don't*?

Helen: [to Kathy] I thought *Lisa* had asked it because the next week you told us that you had gone home after the meeting and said to yourself, "Oh, okay, now I understand: The discourse is in the task."

Kathy: That makes sense to me, Helen.

Helen: But, actually, it turns out that *you* asked the question.

Marian: I was going to say that I think they're related. That we're pushing each other, but it's with the assumption that it's really in there. We're not saying, "This is what you don't know," or "I don't think you've thought about this." We're saying, "Have you thought about all these angles?" or maybe we're pushing it a little, because we realize from our experience that pushing does help us clarify for ourselves. And so we're helping each other to clarify.

Questions and the Co-Construction of an Idea

Lisa: And we are helping to develop an idea in progress. I think it's really fascinating that Kathy didn't remember asking the question ["Isn't the discourse in the task?"] that drove my journal entries for weeks. I had pages and pages that I wrote about this question; it really pushed me to think about my rationale.

You asked that question and later on you were saying, "I understand now," as if it were somebody else's idea. It was kind of this in-progress thinking that you threw out, "the discourse in the task." And then Carole built on it and it became this idea right there on the table and we really looked at it and it still is really with us, pushing us. And then it kind of came back and you left with your own new version of what the question was. It was kind of like what Helen talked about when she said that our ideas are not just celebrated, but people grab onto a half a conjecture and run with it. Especially in this instance, where you threw out something that just seemed so profound.

Kathy: I think questioning is several different things. I want to revise. Jan made me think about the questions I ask in my classroom and in this group as well. Sometimes I ask students questions because I want to understand what they're thinking. I don't want them to change what they're thinking. I don't want them to move beyond where they are, I'm just trying to understand it. Sometimes I ask them questions in order to make them think harder about this or to move them with their reasoning. Probably there are other reasons.

Marian: And that would hold here in the group too?

Kathy: I think so.

I think about the conversation we had the night when Steve was taking his very strong stand on the multiplication tables. I'm thinking about the questions I was asking him that night: Some of the time I wanted to know what he was thinking and some of the time my questioning was to say to him, "Stop and think about this, Steve."

Lauren: So that's not *just* understanding; that's trying to push him to think harder?

Kathy: Yeah. It almost feels like there's a third one, like . . .

Lisa: One is "Keep going with that idea, say more," and other is "Stop and look back on it."

Lauren: Another word that has come up in the writing and the conversation is "challenging," and I've been trying to think if pushing and challenging are the same thing.

Kathy: I think they're different.

Lauren: How would you define the difference?

Carole: Kathy, in your class when you say, "I want you to look at a new idea that's on the board. I want you to think about it," in a sense, aren't you challenging them?

Kathy: That's more like pushing.

Kathy: Challenging is almost . . .

Helen: Confrontational?

Steve: It's a way of disagreeing?

Kathy: But it's a *strong* way of disagreeing. I think you have to have a sense that people are going to stay with you and not take offense and get angry before you go to challenge them.

Jan: Are you sort of thinking of challenging and pushing an idea?

Kathy: I think it's gentler.

Lisa: There are supportive questions and then there is pushing with support. But we have had some discussions where there is some challenging going on, and, for me, it was uncomfortable. That assessment discussion that we had was very uncomfortable for me. I think I probably said two words that whole night. I didn't want to be confrontational, but I was frustrated about how to ask questions without being confrontational. There was a lot of confrontation going on and it felt like it was backhanded, so I kind of retreated.

Lauren: So that wasn't a time that you had a sense that the interaction was supportive pushing?

Lisa: I didn't feel that it was supportive, so I backed out of it. But other people were still engaging in it, so they may have thought it was supportive.

Kathy: I thought it was a great discussion and I just loved it. But now I'm wondering, "What did I say? How did I say it?"

Lisa: It could have just been where I was at that particular day: I was feeling urgency about figuring out *today* what I was going to do for *this* marking period, and it was a very theoretical discussion. That was probably frustrating for me, wanting to have answers or some feedback about what might I do this week when I'm calculating grades. Really, you know, it was more about questioning answers and not about answering questions. But if we say the group is about questioning answers and not answering questions, that's what it was.

Kathy: I guess I left feeling that it was unresolved. I didn't think people had sanctioned anything.

Marian: I never felt like we had to come to an answer. So I guess what I'm saying is that that's why I didn't view it as a confrontational meeting, I wasn't looking for an answer. Maybe Lisa was looking for an answer.

Steve: Maybe what made it seem confrontational is that it didn't seem like there was as much open thinking going on as usual. On other occasions when people are pushing each other there's more listening and wondering. It didn't seem like there was any change taking place.

Lisa: It felt like we were talking at each other and not with each other.

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Jan: I was listening more than talking, because I'm trying to resolve a lot of these things in my own mind. When I grade, I sort of hide and don't let anyone else know how I do it. I got my school to go away from A, B, C, D. So I just liked to hear the rationale. I have a parent who says, at every report card, "I don't agree with this form of grading, I want to know how she has improved." So I wrote up an explanation that I thought would show him that, but he wants to know if she has gone to a 98 from a 95!

Is Challenging Bad?

Jan: Are we assuming that we all think that challenging is negative? Because it seems like we are using the word that way. I wonder if some of the negative feelings that we might have about this are because often when you are challenging students in your classroom you're trying to control their thinking. I mean, you're hoping they'll go in a certain direction.

Helen: You don't want them to conclude that division is commutative.

Jan: Well, if you're challenging their thinking about multiplication, your goal is to try to get them to come to some understanding about what multiplication is. There is some control because *you're* asking the questions and they're not just questions that are out there somewhere and are meaningless. So, I wonder whether challenge implies control.

Lisa: With wrestlers, you have a prize winner and you have a challenger who is hoping to take control over the prize. The word "challenge" has the connotation that there is going to be a winner.

Carole: I drew a mountain: I think of a challenge as going beyond, it's not getting at just the basics, it's going beyond.

Kathy: I guess I want to know what people think: Do you think confrontation is bad, then, not a good thing for our group to do? I feel that reaching a point where we can actually confront each other and be challenging is a *good* place to be. It implies trust.

Jan: It's our ideas that are being challenged and not our *being*. But we're so used, as teachers, to feeling that when our ideas are being challenged our very being is being torn apart.

Kathy: We can't separate ourselves from our practice.

Jan: But maybe we can do that here, right?

Kathy: But I think conflict deepens a relationship. It might be kind of uncomfortable when you're in it. . . .

Debi: Then there are attack questions and those you don't want. I don't think anybody feels safe in that sort of conflict. But confrontation, to me, is okay.

Kathy: See, I come from a family where people are pretty confrontational and do a lot of attacking, but we've always kind of enjoyed that. But a lot of people don't, and I'm always kind of surprised by that—well, I'm not surprised anymore, but I forget.

If anything, I feel bad that I didn't notice that Lisa bailed out.

Lisa: Debi is saying that she was allowed to stay quiet until she was ready. I was allowed to stay quiet because I didn't feel comfortable engaging at the level that other people were engaging. But I was

still engaged. I was still very much compelled by the discussion, but I had just retreated to a safe place where I could get a handle on what was going on because I didn't feel safe.

But it's one thing to be putting something on the table and saying, "Do you think that this is true?" and talking about that idea. And it's another thing to have "This is what I think," "This is what I think," and having a *butting* of ideas instead of a *meshing* of ideas. That was what was frustrating: I was hoping that there would be a collaboration, a wondering about what are some ways to handle this. I was not looking for an answer like, "That's what Teri does, so that's what I'm going to do." I was looking for intellectual exploration.

Steve: It occurred to me that when Kathy was talking about all the ways *we* question and about the teachers in the staff room misinterpreting questions, I wonder how *kids* interpret questions.

Debi: Because kids say to me, "Why do you always ask me why?"

I'm wondering if we think about what assumptions they're making about what we're saying. I kind of wonder how they're feeling. They need that silent time. I put them on the spot.

Circling Back

Kathy: I want to go back to what Marian wrote about the development of our discourse and say quickly about something I disagreed with: I don't think we developed discourse because we saw it in action on Deborah's tape. I think we developed discourse because of our task. I think the discourse is in the task and I think that's why our group has discourse, not because it's something we learned from watching Deborah's tape.

Marian: It can't be both?

Kathy: It could be. But that part isn't in here. It makes it seem like we were pretty passive, that somebody taught us how to do discourse, and then they did discourse. I think we were much more active in that. Because of our task, which was understanding our own teaching, understanding our own mathematics.

Marian: I would agree, I would say it's both.

Kathy: Because I'm thinking about my own classroom. They don't watch how to do discourse and then learn how to do discourse. If I give them a good task, they do it.

Marian: The discourse is in the task?

Kathy: Now it's not a question, it's a declarative sentence. So that's what I'm disagreeing with.

Helen: Well, do we need a group simply because we're trying to do something that's hard and different or is it also because we are trying to create conversation and we need to engage in conversations in order to create them?

Kathy: Lucy Caulkens says that teachers can't really understand how to teach writing unless they write themselves. It doesn't quite fit for me here, but I guess it must be true.

Helen: I wouldn't agree that it *must* be true. Maybe it's too pat.

Kathy: I mean, it seems sensible: You can't teach writing well unless you write, you can't have good discourse unless you . . .

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Lauren: But I think that the function of the group is broader than that. We are learning more than just about how to create conversations in classrooms and maybe that's why it's too pat to make it that simple. It makes sense. But it sort of discounts the power that we're learning about, the power that the group provides. But then when you come back to say, well, could you learn to create conversations in the classroom without a group, then that's clear.

My other question was, is the need for a group specific to mathematics? Is it related to the fact that we all had bad experiences learning math?

Kathy: I don't know, I mean, I want to change how I'm teaching reading, and I've been thinking about it a lot this week, but I thought, "This is going to be really hard to do all alone."

I think it's all the same thing.

Notes

[1]For a detailed description of the agenda of the researchers and the early history of the group, see Featherstone, Pfeiffer, and Smith, in press.

[2]The nine authors listed here, plus one other group member who has been unable to participate in the writing of this paper.

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